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Solvability of boundary value problems in the geometrically and physically nonlinear theory of shallow shells of Timoshenko type

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Abstract

This paper deals with the proof of the existence of solutions of a geometrically and physically nonlinear boundary value problem for shallow Timoshenko shells with the transverse shear strains taken into account. The shell edge is assumed to be partly fixed. It is proposed to study the problem by a variational method based on searching the points of minimum of the total energy functional for the shell-load system in the space of generalized displacements. We show that there exists a generalized solution of the problemon which the total energy functional attains its minimum on a weakly closed subset of the space of generalized displacements. © 2009 Allerton Press, Inc.

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